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summaries are given of the chief characteristics of the labyrinth of animals of various species and orders. References are made to the more important papers dealing with the comparative anatomy of the labyrinth. There is no attempt at a prolonged treatment of the speculative aspect of the subject, although there is a short chapter in which there is discussed the value of the labyrinth in the determination of phylogenetic problems. The semicircular canals vary more from species to species than the cochlea does. There are two types of cochlea: sharp pointed, carnivora and rodents; flat; cetacea, primates, ungulata, cheiroptera, sirenia, and insectivora. The edentata have an intermediate type. Both types are found in the marsupalia.

At the end of the volume there is given a very important table of the chief measurements of each of the labyrinths studied.

Stereoscopic illustrations of organic structures are likely to be more and more utilized as simpler methods of taking the photographs and of studying them are devised. Dr. Gray has been undoubtedly successful in both respects. There are, however, some disadvantages in relying wholly upon this method of illustration. Only one object can be viewed at a time, so that quick comparison of two or more objects is difficult. The value of the book to one who has not a great deal of time to devote to its perusal would be much increased were diagrammatic outlines of the objects studied arranged in groups. With the more important similarities and differences thus emphasized the details revealed by the stereoscope could be followed with greater ease and interest.

The author has, however, furnished a rich lot of material for the comparative anatomist, and has made a distinct contribution to anatomical technique.

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HERPETOLOGY OF JAPAN AND ADJACENT
TERRITORY

"HERPETOLOGY of Japan and Adjacent Territory" forms an important addition to scientific literature and is the work of Dr. Leon-

hard Stejneger, curator of the division of reptiles and batrachians in the United States National Museum. Even a superficial examination of this work shows Dr. Stejneger's painstaking methods in handling his subject. His manner of simplifying descriptions, interspersing paragraphs helpful to the novice, besides giving some attention to habits, produces a work of far broader use and interest than a strictly technical compilation. The author has taken uniform care to present a résumé under the head of each order, suborder, family and genus, this plan being very satisfactory to the reader in bringing his information strictly up-to-date. The tendency of boiling down descriptions of families and genera to concise and pertinent paragraphs shows considerable study. Strong characteristics are brought to the front and the student is saved wading through the mass of descriptive matter favored by many scientific writers—which matter is often remarkable for its repetition. Throughout the work, there is an effort, by means of foot-notes, to define the meaning of the technical names—both generic and specific—a method we have noted in previous work by Dr. Stejneger. An excellent idea—applied to the treatment of the serpents—is the presence of the popular Japanese name over the description of each species. This condition should make the work very useful to the collector in Japanese territory.

The thirty-five plates show judicious selection. Regarding them the author explains:

The plates are mostly reproductions of important illustrations more or less inaccessible to those for whom this work is chiefly intended. Very often these illustrations represent type specimens, and in nearly every instance are based on specimens collected in the regions covered by this work. The expensive *Fauna Japonica* is long since out of print, and the reproduction of the best figures from this classic will be welcome to the majority of students of Japanese herpetology.

In the text are numerous pen drawings by Mr. R. G. Paine—to the number of over four hundred. Altogether the work may be said to be profusely illustrated and, with its nu-

merous keys, fine bibliography and list of localities in Japan, the Riu Kiu Archipelago and Formosa (with their synonyms) arranged in the form of a consulting and descriptive list, should be of much value to all students of herpetology.

In his enumeration of species Dr. Stejneger shows us that 50 species of amphibians are to be found in Japan and adjacent territory. Of the order *Caudata* (salamanders and newts) there are 13 species. The *Salientia* (order of frogs and toads) is represented by 37 species. Seventeen species of *Rana* (genus of typical frogs) occur in the territory treated. The reptiles are elaborately represented, though the serpents greatly predominate in number of species. The lizards occur to the number of 29 species—these the members of 15 genera. Sixty-one species of snakes are enumerated, representing 26 genera. Among the serpents are 25 poisonous species, which are the members of 13 genera. Among the venomous snakes the members of 6 genera and to the number of 13 species are marine or the inhabitants of bays or the mouths of the larger rivers. The author's treatment of the strictly aquatic snakes—the Hydrinæ—is particularly interesting in adding to knowledge relating to the distribution of these reptiles. Of the order of turtles and tortoises 11 genera are quoted and 14 species described as inhabitants of the area involved.

While Dr. Stejneger's work is uniformly valuable to the herpetologist there is a tendency throughout to alter the nomenclature of families and genera. The author explains:

With regard to the nomenclature of families, genera and species, the author adheres strictly to the "International Rules of Zoological Nomenclature" adopted by the International Congresses of Zoology. Changes in nomenclature necessitated by these rules, therefore, must not be laid to any desire of the author to alter names, but to the necessity of conforming strictly to the laws now generally accepted by the working zoologists of the world.

To the writer of this review it seems that the laws mentioned should have some limitation. This search for "priority" by technical students is discouraging many young students

of zoology, who, after mastering various scientific names in works that have supposedly brought them strictly up-to-date, find in subsequent works an imposing array of unfamiliar titles. The adjustment of "priority" appears to be as remotely distant as ever: for with the greater number of scientific works appearing we find suggestions by the authors as to sweeping changes in nomenclature. It seems a pity to batter down names that have for years been generally accepted. Few zoologists are much benefited by perusing exhaustive lists of synonyms and the preparation and study of these must detract from actual observations of the subjects involved.

Among long-standing names that have fallen by Dr. Stejneger's decisions is the term for a great class—the Batrachia. This, the author explains, is a synonym pure and simple of the much older term *Salientia*, standing for the order of frogs and toads. That these changes in nomenclature are difficult to follow is in evidence from the cover of Dr. Stejneger's publication where the author's title is given "Curator, Division of Reptiles and Batrachians," while to be strictly up-to-date and correct, as pointed out in the text, it should be "Curator, Division of Reptiles and Amphibians." Among other changes in nomenclature might be mentioned the well-established genus of snakes *Coluber*—changed to *Elaphe*, and, as an instance that is liable to bring about some confusion, the use of the term *Coluber* in place of *Pelias* among the vipers. Also, according to the author, the family term *Viperidæ* must go. A new name, the *Cobridæ*, is substituted for it. Dr. Stejneger arranges in the family *Elapidæ* the subfamilies *Elapinæ* and *Hydrinæ* (*Hydrophinae*). It appears inconsistent to follow this arrangement with the designation of the *Cobridæ* (*Viperidæ*) and the *Crotalidæ* as distinct families.

To the strictly technical worker these discussions and changes in nomenclature are barely confusing—and may be of considerable interest. They certainly show a great amount of thought and work on the part of the author. To the less advanced student, however, the new terms appear formidable, set former

knowledge at variance and bring about a vague query as to whether it is worth while to adopt any particular system of classification while zoological nomenclature remains liable to such changes. In view, however, of the general excellence of Dr. Stejneger's publication, these criticisms must be classed as quite superficial.

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DISCUSSION AND CORRESPONDENCE

A PLAN OF PUBLICATION FOR AGRICULTURAL EXPERIMENT STATION INVESTIGATIONS

THE passage of the Adams Act marked a new era in the development of the agricultural experiment stations and is destined to exercise a great influence on the character of the investigations and the publications issued. The investigations carried on under the Hatch act, while largely scientific, have nevertheless, in the main, been of general character intended primarily to meet the immediate needs of farmers and orchardists.

When the stations were first established as a result of the Hatch Act, agriculture was in a chaotic condition, there being scarcely any available trustworthy literature. The first work of the stations was thus, naturally and properly, largely pioneer work. This work has been carried forward with energy and success and "scientific farming," so called, has been rescued from disrepute and established on a basis of trust and confidence. With the systematizing and advance of our knowledge and the development of a trained corps of scientific agricultural workers, the necessity for more profound research on agricultural problems has become more and more apparent. Station workers, heretofore, have generally been unable to undertake very extensive research on fundamental problems, owing to lack of funds, the demand for immediate information on lesser problems, routine duties in answering correspondence and the multitudinous duties incident to the work of organization and the promotion of agricultural knowledge. With the passage of the Adams Act, which is expected to be used exclusively for fundamental research, the character of the

work will be largely changed and extensive experiments will be carried out on the fundamental problems of agriculture, which will not have in view their immediate practical value. Heretofore the bulletins published in the series of the various stations have been largely of practical nature and adapted to the immediate needs of agriculture. True, very many bulletins have been published containing excellent scientific matter, but these were largely out of place in the regular series of bulletins as maintained by the stations. In several stations scientific and technical series of bulletins were started to accommodate such scientific papers which were not suited for general distribution. Owing to the confusion in quoting such publications and other reasons, all such special series have, I believe, been discontinued.

As a result of the Adams Act there is certain to be many bulletins prepared in the near future of purely scientific nature, which will not be satisfactory for publication in the regular series of station bulletins. It behooves station authorities, therefore, to carefully consider the means of publication and devise some satisfactory method which will meet the present requirements and provide for future needs. The writer has given this matter considerable thought and desires to suggest the plan described below for consideration.

The writer would suggest the establishment of a series of agricultural journals or memoirs to be edited and published under the direction of the Association of Agricultural Colleges and Experiment Stations. The field of agricultural research could be divided up and a separate series maintained for each division, as, for instance, a separate series for each of the following subjects:

- Agronomy,
- Horticulture,
- Plant Pathology,
- Plant Physiology and Anatomy,
- Plant Biology and Breeding,
- Soil Investigation,
- Dairy Investigation,
- Animal Husbandry,
- Poultry Investigation,
- Animal-breeding,